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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,881	08/18/2003	Mark Bader	EMP 0120 PUS2	3319
22045	7590	02/23/2005	EXAMINER	
BROOKS KUSHMAN P.C. 1000 TOWN CENTER TWENTY-SECOND FLOOR SOUTHFIELD, MI 48075			SAYOC, EMMANUEL	
			ART UNIT	PAPER NUMBER
			3746	

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/642,881

Applicant(s)

BADER ET AL.

Examiner

Emmanuel Sayoc

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 10-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/18/03, and 15 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/18/03 EES
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to the amendments of 11/15/2004. In making the below rejections and/or objections the examiner has considered and addressed each of the applicants arguments. Claims 1-15 are pending, and claims 1-9 are under current consideration.

Drawings

2. In view of the supplemental drawings filed 11/15/2004, the objections to the drawings are hereby withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriya et al. (U.S. 5,401,146), and in view of Hurley (GB 2,346,266).

With respect to claims 1, 7, and 8, in Figure 1, Moriya et al. discloses a fluid pump, in this particular case for a compressor. The fluid pump consists of a motor housing assembly having an inlet housing (2), a stator housing (9), an outlet housing (5), a rotor (27), and a rotor shaft (16) supported by front and rear bearings (30, 33).

The stator housing assembly (9) includes a substantially cylindrical metal case (outer housing) and an encapsulated stator assembly (23, 27). The device further includes an impeller (15) rotatably positioned in the inlet housing (2) and having an impeller axis. A rotor assembly (28) is rotatably located inside a rotor cavity (formed by 29) and is connected to the impeller (15) for rotating the impeller (15) for pumping liquid from the inlet housing (2) to the outlet housing (5).

The Moriya et al. device differs from the claimed invention in that there is no explicit teaching that the stator is encapsulated with a polymeric material.

Encapsulation is intended to provide protection, electrical insulation, and thermal dissipation enhancement. The Moriya et al. device recognizes the need for protectively covering the stator assembly from the fluid flow, as well as the need to dissipate heat from the stator assembly. As mentioned above, stator encapsulation was not a new concept at the time the invention was made. Hurley provides an example of an electrical motor device that features the encapsulation of the entire stator. The encapsulation material, a glass polyester dough molding compound, qualifies as a polymeric material as claimed in claims 1, 11, 29, and 40. This encapsulation inherently provides protection from the flow of fluid or any external agents. In addition, polymeric material encapsulation of electric conductors particularly within stator assemblies was known in the art at the time the invention was made. Therefore in Moriya et al. in view of Hurley, it would have been obvious to one having normal skill in the art at the time the invention was made to modify the enclosed stator assembly of Moriya et al. to a polymeric encapsulated assembly, as taught by Hurley, in order to achieve the

protective covering, electrical insulation, and thermal conductive properties associated with a polymeric encapsulation. Such a modification would insure that the stator windings would be properly secured and insulated from one another and the external fluid. Thermal conductivity and electrical insulation are properties of polymeric materials that are advantageous in such fluid pumps. The flow of fluid through the pump's inner cavity provides cooling for the encapsulated stator assembly, thus improving pump operation and efficiency.

With respect to claim 2, the inlet housing (2) and outlet housing (5) are fastened together to secure the stator housing assembly there between.

With respect to claim 3, the metal case includes liquid flow passages (45) formed therein by ribs (24a, Figure 4), which constitute diffuser vanes, and inner (23) and outer walls (9) of the metal case (9), thereby completely defining the liquid flow passages.

With respect to claim 4, the polymeric capsule member comprises a thermally conductive, electrically insulative material.

With respect to claim 5, the stator housing (9) assembly further includes a front cover (26) and a rear cover (25) plugging opposing ends of the rotor cavity.

With respect to claim 6, the fluid pump further comprising inlet diffuser vanes (13) formed on the front cover (25).

With respect to claim 9, the fluid pump contains a bearing seat (35) for locating the rear bearing (33).

5. Claims 1-5, and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harlamoff (U.S. 2,520,880), and in view of Hurley (GB 2,346,266).

With respect to claims 1, 7, and 8, in Figure 1, Harlamoff discloses a fluid pump, in this particular case for a compressor. The fluid pump consists of a motor housing assembly having an inlet housing (2), a stator housing (1), and an outlet housing (3). The stator housing assembly (1) includes a substantially cylindrical metal case (outer housing) and an encapsulated stator assembly (4). The device further includes an impeller (11) rotatably positioned in the inlet housing (2) and having an impeller axis. A rotor assembly (shown not enumerated), with a rotor (shown), and rotor shaft (10), supported by front and rear bearings (7, 9), is rotatably located inside a rotor cavity (28 and inner wall shown in Figure 3) and is connected to the impeller (11) for rotating the impeller (11) for pumping liquid from the inlet housing (2) to the outlet housing (3).

The Harlamoff device differs from the claimed invention in that there is no explicit teaching that the stator is encapsulated with a polymeric material.

Encapsulation is intended to provide protection, electrical insulation, and thermal dissipation enhancement. The Harlamoff device recognizes the need for protectively covering the stator assembly from the fluid flow, as well as the need to dissipate heat from the stator assembly. As mentioned above, stator encapsulation was not a new concept at the time the invention was made. Hurley provides an example of an electrical motor device that features the encapsulation of the entire stator. The encapsulation material, a glass polyester dough molding compound, qualifies as a polymeric material as claimed in claims 1, 11, 29, and 40. This encapsulation inherently

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provides protection from the flow of fluid or any external agents. In addition, polymeric material encapsulation of electric conductors particularly within stator assemblies was known in the art at the time the invention was made. Therefore in Harlamoff in view of Hurley, it would have been obvious to one having normal skill in the art at the time the invention was made to modify the enclosed stator assembly of Harlamoff to a polymeric encapsulated assembly, as taught by Hurley, in order to achieve the protective covering, electrical insulation, and thermal conductive properties associated with a polymeric encapsulation. Such a modification would insure that the stator windings would be properly secured and insulated from one another and the external fluid. Thermal conductivity and electrical insulation are properties of polymeric materials that are advantageous in such fluid pumps. The flow of fluid through the pump's inner cavity provides cooling for the encapsulated stator assembly, thus improving pump operation and efficiency.

With respect to claim 2, the inlet housing (2) and outlet housing (3) are fastened together to secure the stator housing assembly (1) there between.

With respect to claim 3, Harlamoff in Figure 3, teaches that it was well known in the art at the time the invention was made to incorporate fluid passages (24, 25, 26, and 27) within a stator housing to assist in cooling the pump and pump housing (see column 3 lines 27). The passages are completely defined by an inner wall (28), an outer wall (1), and a plurality of radial walls (shown not enumerated) constituting diffuser vanes.

With respect to claim 4, the polymeric capsule member comprises a thermally conductive, electrically insulative material.

With respect to claim 5, the stator housing (1) assembly further includes a front cover (5, 8) and a rear cover (6) plugging opposing ends of the rotor cavity.

With respect to claim 9, the fluid pump contains a bearing seat (shown) for locating the rear bearing (9).

Response to Amendment

6. The objection to the title and the specification is hereby withdrawn in view of applicant's amendments.

Response to Arguments

7. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection. Examiner acknowledges the submission of a terminal disclaimer, however the double patenting rejections have been withdrawn in favor of the prior art evidence.

8. Since new grounds of rejection have been made, this office action is being made non-final to afford the applicant the opportunity to respond to the new grounds of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references are cited to further show the state of the art with respect to collision detection and control systems for linear compressors/motors.

U.S. Pat. 3, 559, 539 to Nagy

U.S. Pat. 3, 863, 935 to Batch


U.S. Pat. 5, 639, 227 to Mills


Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Sayoc whose telephone number is (571) 272 4832. The examiner can normally be reached on M-F 8-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Emmanuel Sayoc
Examiner
Art Unit 3746


CHERYL TYLER
SUPERVISORY PATENT EXAMINER

ECS
